Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report for Anchorage Nursing Home

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: October 29, 2003

Table 1: Public Water System (PWS) Information

PWS Name	**Anchorage Nursing Home**
PWS Address	**Shelburne**
City/Town	**Shelburne, Massachusetts**
PWS ID Number	**1268001**
Local Contact	**Mr. William Barton**
Phone Number	**800-340-6041**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #3	1268001-03G	253	633	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road de-icing, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

Shelburne is a small community in northwestern Massachusetts. The Anchorage Nursing Home is located on Route 2 (Mohawk Trail) and serves a population of approximately 33 residents plus staff. Although Shelburne Falls has a municipal water system the service does not extend to this part of town. Therefore, the nursing home utilizes on site water supply and septic system for wastewater disposal. The system operates a single 6-inch diameter, 380-foot deep, flowing artesian bedrock well. Based on the results of a 48-hour extended duration pumping test conducted in 1993 and Zone I restrictions, the well was approved for a daily maximum withdrawal of approximately 10.5 gallons per minute.

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

The nursing home also maintains two emergency supply wells (01G and 02G). Those wells have been severed from the potable water supply system but maintained in the event of an emergency. Emergency sources will not be addressed further in this report.

The Zone I is the protection area immediately surrounding the well while the Interim Wellhead Protection Area (IWPA) provides an interim protection area for a water supply well when the actual recharge area (Zone II) has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The Zone I and Interim Wellhead Protection Area (IWPA) radii, based on the approved pumped volume from Well #3, are 253 feet and 633 feet, respectively. Please refer to the attached map of the Zone I and IWPA.

Well #3 withdraws water from the bedrock aquifer. The complex is located on an upland area underlain by till and shallow bedrock. The driller's log indicates till over schist and geologic mapping of the area indicates the Conway Formation of metamorphic quartz-mica schist with marble interbeds. Although the well is a flowing artesian well, there is no evidence of a continuous confining unit in the immediate area and there is some bedrock exposure in the vicinity. Wells drilled in these conditions are considered highly vulnerable to potential contamination from the ground surface because there is no significant hydrogeologic barrier, such as clay, to prevent surface contamination from migrating into the bedrock aquifer.

For information on current water quality monitoring results, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Refer to Table 1 for additional information regarding the location of the well and activities within the protection areas.

2. Discussion of Land Uses in the Protection Areas

The Zone I for Well #3 is in compliance with the DEP Zone I requirements that restrict activities to only those associated with water supply or passive, non-threatening activities. The IWPA encompasses the entire complex including the residential area, the fuel oil storage area (inside the building), parking, maintenance facilities and all of the septic system components. All of these facilities are located topographically downhill from Well #3. The remainder of the IWPA, topographically uphill of Well #3, is woodland.

Table 2: Table of Activities within the Water Supply Protection Areas for Both Sources

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Internal transportation/parking	No	Yes	Moderate	Limit road deicing materials usage and monitor parking areas.
Nursing Home	No	Yes	Moderate	Supply BMPs to staff regarding waste disposal
Fuel storage	No	Yes	Moderate	Continue to use best management practices and monitor use and delivery of petroleum products.
Septic system components	No	Yes	Moderate	Continue to maintain septic system and protect it from improper disposal

*** -For more information, see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

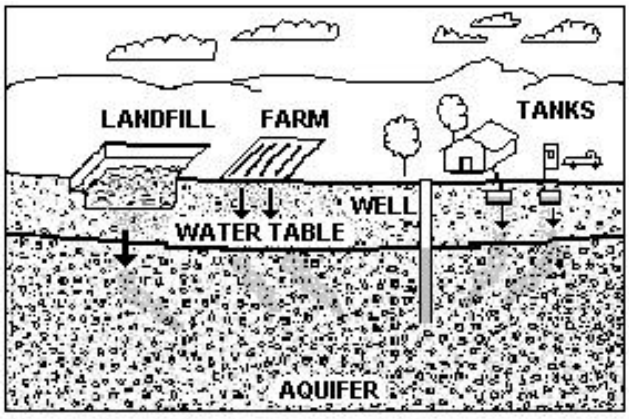

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Key issues include:

1. **Transportation/parking**
2. **Nursing Home**
3. **Fuel storage (ASTs)**

The overall ranking of susceptibility to contamination for the Anchorage Nursing Home supply well (03G) is moderate based on the presence of several moderate ranked potentially threatening land uses or activities in the IWPA. Please refer any questions about water quality at the facility to the contact person listed in Table 1.

The nursing home is commended for installing a more protective well that is conforming with Zone I requirements. Continued monitoring and site management is recommended to prevent accidents and minimize threats within the IWPA protection area of the well.

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

1. Transportation/parking – The facility parking area and maintenance areas are located within the IWPA. These facilities are located topographically downgradient from the well and stormwater runoff is directed away from the well.

Transportation corridor Recommendations:

- Monitor all fuel storage and maintenance equipment.
- Prepare an Emergency Response Plan that includes coordination among the DEP, the Town, and the State Police in the event of an accident near the wellhead.

2. Nursing Home/Residential Land Use – The nursing home facility is located within the IWPA. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** – Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the groundwater because septic systems leach to the ground. If septic systems fail or are not properly maintained they could be a potential source of microbial contamination.
- **Household Hazardous Materials** - Hazardous materials may include cleaning materials, medications, automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used generally in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground and streams. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automobile leaks, maintenance, washing, or accidents. Visit the Nonpoint Source pollution web site for additional information at http://www.state.ma.us/dep/brp/wm/nonpoint.htm.

For More Information:

Contact Catherine V. Skiba in DEP's Springfield Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier and town boards.

Residential Land Use Recommendations:

- Educate staff, particularly maintenance staff on best management practices (BMPs) for protecting water supplies. Focus efforts on management and disposal of cleaning materials and potentially hazardous materials.

4. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will further enhance the protection of the well and minimize its susceptibility to contamination. Please review and adopt the key recommendations above and as follows as is feasible:

Priority Recommendations:

- Continue efforts to control activities in the IWPA area and monitor use of hazardous materials.

Zone I:

- Prohibit non-water supply activities from Zone I.
- Continue regular inspections of the Zone I. Look for illegal dumping, evidence of access or vandalism.
- Do not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- Train staff on proper hazardous material use, disposal, emergency response, and best management practices. Post labels as appropriate on raw materials and hazardous waste.
- Post drinking water protection area signs at key visibility locations away from the immediate wellhead area.
- Educate neighbors and consumers regarding BMPs with respect to household hazardous materials handling and disposal and septic system maintenance.

Planning:

- Have a plan to address short-term water shortages and long-term water demands.
- Keep the phone number of a bottled water company readily available in the event of an emergency.
- Supplement the SWAP assessment with additional local information, and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding Sources:

The DEP's Wellhead Protection Grant Program provides funds to assist public water suppliers and their partners in addressing water supply source protection through local projects. Protection recommendations discussed in this document may be eligible for funding under this grant program. If funds are available, in the spring, DEP posts a new Request for Response for the grant program (RFR).

These recommendations are only part of your on-going local drinking water source protection. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas.
- Recommended Source Protection Measures Fact Sheet